DOCUMENT RESUME

ED 229 223 SE 041 423

TITLE	WESTPAC Workshop on Coastal Transport of Pollutants (Tokyo, Japan, March 27-31, 1980). Summary Report. Workshop Report No. 24.
INSTITUTION	United Nations Educational, Scientific, and Cultural Organization, Paris (France). Intergovernmental Oceanographic Commission.
PUB DATE	80
NOTE	28p.; Document contains some marginal legibility.
AVAILABLE FROM	Secretary IOC, UNESCO, Place de Fontenoy, 75700 Paris, France.
PUB TYPE	Reports - General (140) -- Collected Works - Conference Proceedings (021)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Ecology; Foreign Countries; *Ocean Engineering; *Oceanography; *Transportation; Wastes; *Water Pollution; Workshops
IDENTIFIERS	*Pacific Region; *Pollutants

ABSTRACT

Provided is a 4-page summary of the WESTPAC (Western Pacific) Workshop On Coastal Transport of Pollutants and five appendices. Workshop objectives were to review present knowledge of the physical dispersion, accumulation, and transportation of pollutants, and analytical methods and data processing in the Western Pacific Region; identify major research problems expected to be carried out in the coming 5 to 10 years, emphasizing study of methods and techniques of field measurements, and processing of data obtained; and to make recommendations for research and training problems and for cooperative data/information exchange in the region. Included in the summary are workshop mechanics (such as opening statements and administrative arrangements), lists of papers presented, list of accepted research projects, and highlights of training/data-exchange projects. Appendices include workshop agenda, list of participants, recommendations, and descriptions of 7 proposed research projects, and the proposed training and data-exchange projects. Title, background information, justification, and long-range/immediate objectives are provided for each project. (Titles and availability for 24 other Intergovernmental Oceanographic Commission final reports are included). (JN)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED22924

Intergovernmental Oceanographic Commission

Workshop Report No. 24

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
✓ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

WESTPAC Workshop on Coastal Transport of Pollutants

Tokyo, 27-31 March 1980

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY
UNESCO
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

SE004423

Unesco

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
Workshop Report No. 24

WESTPAC WORKSHOP ON COASTAL TRANSPORT OF POLLUTANTS

Tokyo, 27-31 March 1980

SUMMARY REPORT

The Scientific Workshops of the Intergovernmental Oceanographic Commission are usually jointly sponsored with other intergovernmental or non-governmental bodies. In each case, by mutual agreement, one of the sponsoring bodies assumes responsibility for publication of the final report. Copies may be requested from the publishing bodies as listed below or from the Secretary IOC, Unesco, Place de Fontenoy, 75700 Paris, France.

No.	Title	Publishing Body	Languages
1.	CCOP-IOC, 1974, Metallogenesis, Hydrocarbons and Tectonic Patterns in Eastern Asia /Report of the IDOE Workshop on/: Bangkok, Thailand, 24-29 September 1973. UNDP (CCOP), 138 p.	Office of the Project Manager UNDP/CCOP c/o ESCAP Sala Santitham Bangkok 2, Thailand	English
2.	CICAR Ichthyplankton Workshop, Mexico City, 16-27 July 1974. (Unesco Technical Paper in Marine Science, No. 20)	Division of Marine Sciences, Unesco, Place de Fontenoy, 75700 Paris, France	English Spanish
3.	Report of the IOC/GFCM/ICSEM International Workshop on Marine Pollution in the Mediterranean, Monte Carlo, 9-14 September 1974.	IOC, Unesco Place de Fontenoy 75700 Paris, France	English French Spanish
4.	Report of the Workshop on the Phenomenon known as "El Niño", Guayaquil, Ecuador 4-12 December 1974	FAO Via delle Terme di Caracalla, 00100 Rome, Italy	English Spanish
5.	IDOE International Workshop on Marine Geology and Geophysics of the Caribbean Region and its Resources, Kingston, Jamaica, 17-22 February 1975	IOC, Unesco Place de Fontenoy 75700 Paris, France	English Spanish
6.	Report of the CCOP/SOPAC-IOC IDOE International Workshop on Geology, Mineral Resources and Geophysics of the South Pacific, Suva, Fiji, 1-6 September 1975	IOC, Unesco Place de Fontenoy 75700 Paris, France	English
7.	Report of the Scientific Workshop to initiate planning for a co-operative investigation in the North and Central Western Indian Ocean, organized within the IDOE under the sponsorship of IOC/FAO (IOFC)/UNESCO/EAC, Nairobi, Kenya, 25 March- 2 April 1976.	IOC, Unesco Place de Fontenoy 75700 Paris, France	Full text (English only) Extract and Recommendations: French Spanish Russian

No.	Title	Publishing Body	Languages
8.	Joint IOC/FAO (IPFC)/UNEP International Workshop on Marine Pollution in East Asian Waters, Penang, 7-13 April 1976	IOC, Unesco Place de Fontenoy 75700 Paris, France	English
9.	IOC/CMG/SCOR Second International Workshop on Marine Geoscience, Mauritius, 9-13 August 1976	IOC, Unesco Place de Fontenoy 75700 Paris, France	English French Spanish Russian
10.	IOC/WMO Second Workshop on Marine Pollution (Petroleum) Monitoring, Monaco, 14-18 June 1976	IOC, Unesco Place de Fontenoy 75700 Paris, France	English French Spanish Russian
11.	Report of the IOC/FAO/UNEP International Workshop on Marine Pollution in the Caribbean and Adjacent Regions, Port of Spain, Trinidad, 13-17 December 1976	IOC, Unesco Place de Fontenoy 75700 Paris, France	English Spanish
11. Suppl.	Collected contributions of invited lecturers and authors to the IOC/FAO/UNEP International Workshop on Marine Pollution in the Caribbean and Adjacent Regions, Port of Spain, Trinidad, 13-17 December 1976	IOC, Unesco Place de Fontenoy 75700 Paris, France	English Spanish
12.	Report of the IOCARIBE Interdisciplinary Workshop on Scientific Programmes in Support of Fisheries Projects, Fort-de-France, Martinique, 28 November-2 December 1977	IOC, Unesco Place de Fontenoy 75700 Paris, France	English Spanish
13.	Report of the IOCARIBE Workshop on Environmental Geology of the Caribbean Coastal Area, 16-18 January 1978	IOC, Unesco Place de Fontenoy 75700 Paris, France	English Spanish
14.	IOC/FAO/WHO/UNEP International Workshop on Marine Pollution in the Gulf of Guinea and Adjacent Areas, Abidjan, Ivory Coast, 2-9 May 1978.	UNEP Palais des Nations 1211 Geneva 20 Switzerland	English French
15.	CPPS/FAO/IOC/UNEP International Workshop on Marine Pollution in the South-east Pacific Santiago de Chile 6-10 November 1978	IOC, Unesco Place de Fontenoy 75700 Paris, France CPPS Dir. de Soberania Maritima Ministerio de Relaciones Exteriores Lima Peru	English Spanish

No.	Title	Publishing Body	Languages
16	Workshop on the Western Pacific Tokyo, 13-20 February 1979	IOC, Unesco Place de Fontenoy 75700 Paris, France	English French Russian
17.	Joint IOC/WMO Workshop on Oceanographic Products and the IGOSS Data Processing and Services System (IDPSS) Moscow, 9-11 April 1979	IOC, Unesco	English
17. Suppl.	Papers submitted to the Joint IOC/WMO Seminar on Oceanographic Products and the IGOSS Data Processing and Services System Moscow, 2-6 April 1979	IOC, Unesco	English
18.	IOC/Unesco Workshop on Syllabus for Training Marine Technicians Miami, 22-26 May 1978	Division of Marine Sciences, Unesco	English French Spanish Russian
19.	IOC Workshop on Marine Science Syllabus for Secondary Schools Llantwit Major, South Wales	Division of Marine Sciences, Unesco	English French Spanish Russian
20.	Second CCOP-IOC Workshop on IDOE Studies of East Asia Tectonics and Resources Bandung, Indonesia, 17-21 October 1978	Office of the Project Manager UNDP/CCOP c/o ESCAP Sala Santitham Bangkok 2, Thailand	English
21.	Second IDOE Symposium on Turbulence in the Ocean Liège, Belgium, 7-18 May 1979	IOC, Unesco	English French Spanish Russian
22.	**Third IOC/WMO Workshop on Marine Pollution Monitoring, New Delhi, 11-15 February 1980.**	**IOC, Unesco**	**English French Spanish Russian**
23.	**Westpac Workshop on the Marine Geology and Geophysics of the Northwest Pacific, Tokyo, 27-31 March 1980**	**IOC, Unesco**	**English Russian**
24.	**Westpac Workshop on Coastal Transport of Pollutants Tokyo, 27-31 March 1980**	**IOC, Unesco**	**English**

Table of Contents

		Page
Summary Report.....		1
Annex I	Agenda	
Annex II	List of Participants	
Annex III	Recommendations	
Annex IV	Proposed Research Projects	
Annex V	Proposed Training Project	
Annex VI	Proposed Data Exchange Project	

Summary Report

1. Opening of the Workshop

The WESTPAC Workshop on Coastal Transport of Pollutants and the WESTPAC Workshop on Marine Geology and Geophysics of the Northwest Pacific were opened in a joint session. Dr. Noriyuki Nasu, Convener of the Geology Workshop, and Dr. Toshiyuki Hirano, Convener of the Pollution Workshop, welcomed the participants and reminded them of the respective recommendations of the Workshop on the Western Pacific which was held in Tokyo, 19-20 February 1979.

The Secretary-General of the Japanese National Commission for UNESCO, Dr. Kohei Shinozawa, welcomed the participants and stressed the interest of Japan in the scientific study of the Westpac region.

The Deputy Secretary of the Intergovernmental Oceanographic Commission (IOC) of UNESCO, Dr. Gunter Giermann, welcomed the participants on behalf of the IOC and thanked the host country for the invitation to hold the Workshop in Tokyo. He recalled the development of WESTPAC to all participants.

The Workshop on Coastal Transport of Pollutants was attended by scientists from the following nine countries: Australia, China, Indonesia, Japan, Malaysia, Republic of Korea, Thailand, U.S.A., and U.S.S.R., (cf. Annex II list of participants).

2. Appointment of Chairman, ad hoc Session Chairmen and Rapporteur; Adoption of Agenda

Following the opening session, the two Workshops convened separately. The Convener of the WESTPAC Workshop on Coastal Transport of Pollutants, Dr. Toshiyuki Hirano, reminded the participants of Decision WESTPAC-I.13 taken at the first session of the Working Group for the Western Pacific (WESTPAC) in Tokyo, 21-24 February 1979, which called for a Workshop on Coastal Transport of Pollutants to be held during 1979-80, and set out its terms of reference. He also called the attention of participants to the IOC Workshop Guidelines. He proposed Dr. J.R. Schubel as Chairman and Dr. Matthias Tomczak as Rapporteur. Both were appointed by acclamation.

The Chairman then asked for adoption of the Agenda. The Agenda was adopted and is given in Annex I. The Chairman proposed Dr. Victor A. Akulichev and Dr. Tetsuo Yanagi as chairmen for two ad hoc sessions on Thursday, Mrs. Absornsuda Siripong and Dr. Roy W. Hann as chairmen for the two Friday ad hoc sessions, and Muhammad Eidman and Dr. Donald W. Pritchard as chairmen for the two sub-groups. All were appointed by acclamation.

The Recommendations of the Workshop are given in Annex II, and the List of Participants in Annex III.

3. Administrative Arrangements

Dr. Toshiyuki Hirano clarified some administrative arrangements and introduced the annotated Agenda.

4. Review of the Present Knowledge of the Coastal Transport of Pollutants in the WESTPAC Region

Opening the presentation of review papers, the Chairman reminded participants that they attended the Workshop as individual experts. He called attention to the objectives of the Workshop:

(i) to review present knowledge on the physical dispersion, accumulation and transport of pollutants, and analytical methods and data processing in the Western Pacific region;
(ii) to identify major research problems expected to be carried out in the coming five to ten years, with emphasis on the study of methods and techniques of field measurements, and processing of data obtained;
(iii) to make recommendations for research and training programmes and for co-operative data and information exchange in the region.

He urged participants to stress in their reports experiences from the past and needs for the future.

The Deputy Secretary of the IOC, Dr. Gunter Geirmann, gave a brief summary of the status of the IOC and, referring to Article 1 of its Statutes, described the tasks of the IOC as the definition of problems, co-ordination of programmes and support with training and data exchange. Dr. Piamsak Menasveta described the Training, Education and Mutual Assistance programme (TEMA) of the IOC and invited the participants to propose TEMA activities within WESTPAC.

4.1 Presentation of review papers describing progress of research and problems in each country

The following papers were presented:

M. Tomczak: Research and monitoring activities related to the dispersion, accumulation and transport of pollutants in Australia.

Xu Qinghui: Marine pollution research and monitoring in China.

H. Nakata, T. Suzuoki and M. Hishida: An outline of research on the coastal transport of pollutants and the monitoring system in Japan.
Brief outline of the marine pollution monitoring system in Japan.
Results and discussion on marine pollution monitoring in Japan.

S.D. Chang: Transport and dispersion of pollutants in the coastal waters of Korea.

K.W. Lee: Coastal transport of pollutants in Korea.

H.C. Tan: Overview of Marine pollution and transport of pollutants in the coastal waters of Malaysia.

R. Hann, Jr: Some aspects of oil pollution in the Western Pacific.

A. Siripong: Physical dispersion, accumulation and transport of pollutants in the Gulf of Thailand.

V.A. Akulichev: Transport of pollutants in the sea, and the optimization of the protection of shallow water from pollution.

Summaries of these papers, if provided by the speakers, will be reproduced in a Supplement to this report.

4.2 Presentation of review papers on selected topics

The following papers were presented:

T. Ichiye: Dynamics of oil spreading and the prediction of oil spill movement.

Y.J. Ro and J.Y. Chung: The diffusion characteristics of the tidal swinging coastal waters.

D.W. Pritchard and J.R. Schubel: Transport of pollutants in estuaries, bays, and inland seas.

T. Yanagi: A review of the physical processes governing transport and distribution of pollutants in the coastal area.

Y. Matsukawa: Recent progress of studies of the circulation process of substances in eutrophicating bays.

D.W. Pritchard: Comments on advective and diffusive transport as related to variations in residual currents.

Summaries of these papers, if provided by authors, will also be included in the envisaged supplement to this report.

5. Identification of Major Research Problems and Elaboration of Recommendations for Research and Training Programmes

The Workshop continued in two sub-groups. Group I, chaired by Dr. Eidman and co-chaired by Dr. Hann, discussed problems in the offshore region. Group II, chaired by Dr. Pritchard, discussed problems of inshore transport of pollutants. It was agreed that the term offshore, in this context, should comprise the coastal zone outside the area of estuaries, bays and inland seas.

Each group drafted and discussed a number of recommendations for research projects and presented them to the Workshop for consideration. The final selection of projects and recommendations was then made in a plenary session on the basis of research priorities.

5.1 Research projects

Seven of the research projects proposed by workshop participants were accepted. They are listed by title below and are summarized in Annex IV. Only projects that related directly to the theme of the Workshop — the Coastal Transport of Pollutants — were considered. As a result, many important projects designed to monitor the occurrence of pollutants and to assess the effects of pollution on the environment and its living resources which were proposed have not been included.

Those approved were:

I Survey of Currents and Tides in the Coastal and Nearshore Waters of the WESTPAC Region.

II A Co-operative Study of the Transport of Pollutants in the Sea of Japan, Yellow Sea including Bohai Gulf, and the East China Sea.

III Long-term Monitoring of the Input via Rivers of Fine-grained Suspended Sediments to Coastal Waters from All Sources and of Dissolved and Particle-associated Pollutants.

IV Investigation of Coastal Sedimentary Systems that Affect the Transportation and Accumulation of Fine-grained Sediments.

V Transport and Accumulation of Agricultural Chemical Residues in Coastal Systems of the WESTPAC Region.

VI Prediction and Monitoring of the Movement and Distribution of Oil in the WESTPAC Region.

VII Exchange Processes and Circulation at Coral Reefs.

5.2 Training and data-exchange projects

Workshop participants discussed the need to develop programmes in the WESTPAC region to train technicians and scientists in the collection and analysis of samples of water, sediment, and organisms for various pollutants. There is also a need for training courses in theory and techniques of the measurement of water movements and in the analysis of the data. A specific project with the following title is outlined in Annex V: The use of and instruction in, standard methods for the sampling and analysis of pollutants and other water quality parameters in the marine environment throughout the WESTPAC region.

Workshop participants emphasized the need for the development of more effective mechanisms for exchange of data, information, and technical capability. This need was formulated as a specific project with the following title; it is described more fully in Annex VI: Establishment of scientific information exchange systems.

6. Adoption of the Report and Recommendations

The Summary Report of the Workshop on Coastal Transport of Pollutants was adopted for forwarding to the Working Group for WESTPAC.

7. Closure of the Session

The Chairman closed the session at 12.30 p.m. on Monday 31 March 1980.

ANNEX I

AGENDA

1. Opening of the Workshop

2. Appointment of Chairman, ad-hoc Session Chairmen and Rapporteur; Adoption of Agenda

3. Administrative Arrangements

4. Review of the Present Knowledge of the Coastal Transport of Pollutants in the WESTPAC Region

4.1 Presentation of review papers describing progress of research and problems in each country

4.2 Presentation of review papers on selected topics

5. Identification of Major Research Problems and Elaboration of Recommendations for Research and Training Programmes

5.1 Research Projects

5.2 Training and data-exchange projects

6. Adoption of the Report and Recommendations

7. Closure of the Workshop

ANNEX II

LIST OF PARTICIPANTS

INVITED EXPERTS

Dr. AKULICHEV, Victor A.	Pacific Oceanological Institute, Far East Science Centre, USSR, Academy of Sciences, VLADIVOSTOK, USSR
Dr. CHANG, Sun-duck	Professor, National Fisheries University of Busan, 599-1 Daeyeon-dong, Nam-gu BUSAN, Republic of Korea
Dr. EIDMAN, Muhammad	Faculty of Fisheries, Bogor Agricultural University, Jalan Pajajaran, BOGOR, Indonesia
Dr. HANN, Jr., Roy W.	Professor, Department of Civil Engineering, Texas A & M University, COLLEGE STATION, Texas 77843, USA
Dr. HIRANO, Toshiyuki (Technical Secretary)	Professor, Ocean Research Institute, The University of Tokyo, 1-15-1 Minamidai, Nakano-ku TOKYO 164, Japan
Mr. HISHIDA, Masataka	Oceanographic Division, Hydrographic Department, Maritime Safety Agency, 5-3-1 Tsukiji, Chuo-ku TOKYO 104, Japan
Dr. ICHIYE, Takashi	Professor, Department of Oceanography, Texas A & M University, COLLEGE STATION, Texas 77843, USA
Dr. LEE, Kwang Woo	Korea Ocean Research and Development Institute (KORDI), P.O. Box 131, Dongdaemun SEOUL, Republic of Korea
Mr. MATSUKAWA, Yasuo	Tokai Regional Fisheries Research Laboratory, Fishery Agency, 5-5-1 Kachidoki, Chuo-ku, TOKYO 104, Japan
Dr. MENASVETA, Piamsak	Department of Marine Sciences, Faculty of Science, Chulalongkorn University, BANGKOK 5, Thailand

Dr. NAKATA, Hideaki	Research Assistant, Ocean Research Institute, The University of Tokyo, 1-15-1 Minamidai, Nakano-ku, TOKYO 164, Japan
Dr. PRITCHARD, Donald W.	Associate Director for Research, Marine Sciences Research Center, State University of New York, STONY BROOK, Long Island, New York 11794, USA
Mrs. QIN, Xuexiang	Assistant Research Fellow, First Institute of Oceanography, National Bureau of Oceanography, P.O. Box 98, QINGDAO, People's Republic of China
Dr. SCHUBEL, Jerry R. (Chairman)	Director, Marine Sciences Research Center, State University of New York, STONY BROOK, Long Island, New York 11794, USA
Mrs. SIRIPONG, Absornsuda	Associate Professor, Marine Science Department, Faculty of Science, Chulalongkorn University, BANGKOK 5, Thailand
Dr. SUZUOKI, Tetsuo	Chief, Chemical Analysis Center for Pollutants, Marine Department, Japan Meteorological Agency, 1-3-4, Ote-machi, Chiyoda-ku, TOKYO 100, Japan
Mr. TAN, Patrick Hock Chuan	Environmental Control Officer (Marine Pollution) Ministry of Science, Technology and the Environment, 1st Floor, Oriental Plaza Building, Parry Road, KUALA LUMPUR, Malaysia
Mr. TANG, Liefeng	Assistant Research Fellow, Institute of Marine Environment Protection, National Bureau of Oceanography, P.O. Box 303, DALIAN, People's Republic of China
Dr. TOMCZAK, Matthias (Rapporteur)	Division of Fisheries and Oceanography, Commonwealth Scientific and Industrial Research Organization (CSIRO), P.O. Box 21, CRONULLA, N.S.W. 2230, Australia

Mr. XU, Qinghui	Assistant Research Fellow, The Third Institute of Oceanography, National Bureau of Oceanography, P.O. Box 70, XIAMEN, People's Republic of China
Dr. YANAGI, Tetsuo	Lecturer, Faculty of Engineering, Ehime University, 3 Bunkyo-cho, MATSUYAMA CITY, Enime 790, Japan
Dr. GIERMANN, Gunter (Deputy Secretary, IOC) Intergovernmental Oceanographic Commission	Unesco 7, Place de Fontenoy, 75700 PARIS, France
JAPANESE NATIONAL COMMISSION FOR UNESCO	Ministry of Education, Science and Culture, 2-2, Kasumigaseki 3-chome, Chiyoda-ku, TOKYO 100, Japan
Dr. NASU, Noriyuki (Chairman of IOC Committee)	
Mr. SHINOZAWA, Kohei (Secretary-General)	
Mr. KATSUYA, Yuichi	
Mr. NIHIO, Masahiro	

OBSERVERS

Dr. AMBE, Mitsuko	Sagami Chemical Research Center, Nishi-Ohnuma 4-4-1, Sagamihara, KANAGAWA 229, Japan
Dr KITANO, Yasushi	Water Research Institute, Nagoya University, Chikusa-ku, NAGOYA 464, Japan
Dr. SUGAWARA, Ken	Sagami Chemical Research Centre Nishi-Unuma, Sagamihara-shi, KANAGAWA, Japan
Dr. SUGIMORI, Yasuhiro	Department of Marine Science and Technology, Tokai University, 1000 Orido, SHIMIZU CITY 424, Japan
Dr. TOKUHIRO, Atsushi	Director, Japan Oceanographic Data Center, Hydrographic Department, Maritime Safety Agency, No. 3-1, 5 Chome, Tsukiji, Chuo-ku, TOKYO, Japan
Dr. YAMANAKA, Ichiyo	Chief, Marine Research Section, Far Sea Regional Fisheries Research Laboratory, 1000 Orido, SHIMIZU CITY 424, Japan

ANNEX III

RECOMMENDATIONS

The WESTPAC Workshop on Coastal Transport of Pollutants,

IOC-WESTPAC (CTP).1 - Recommends to the Working Group for the Western Pacific (WESTPAC) that the programme and projects described in this report be adopted as marine science activities of WESTPAC

IOC-WESTPAC (CTP).2 - Noting that resolution EC-XI.7 of the Executive Council provides for a meeting of a Task Team on Marine Pollution Research and Monitoring

- Being informed that this meeting is now planned for later this year,

Urges all WESTPAC Member States to send experts to this meeting

IOC-WESTPAC (CTP).3 - Recommends that the IOC and/or the Division of Marine Sciences of UNESCO assist in establishing one, or more, training centres within the WESTPAC region for the conduct and co-ordination of intensive short courses on a regional scale to standardize methods of collection, analysis and data processing of
a) samples for pollutant characterization and
b) records of the physical processes that control the transport and dispersion of pollutants in coastal waters.

IOC-WESTPAC (CTP).4 - Recognizing the importance of free and timely exchange of data, information, and technical capability relating to the coastal transport of pollutants and pollution of coastal seas,

- Recommends the establishment of a network of national data centres for the collation, storage, synthesis and dissemination of environmental data on a national basis;

- Urges all Member States to ensure timely supply of data to the RNODC-WESTPAC in accordance with Decision WESTPAC-I.17;

- Further recommends regular publication of a newsletter by a scientific institution, on pollution and the coastal transport of pollutants throughout the WESTPAC region.

ANNEX IV

PROPOSED RESEARCH PROJECTS

I Survey of Currents and Tides in the Coastal and Nearshore Waters of the WESTPAC Region.

II A Co-operative Study of the Transport of Pollutants in the Sea of Japan, Yellow Sea including Bohai Gulf, and the East China Sea.

III Long-term Monitoring of the Input via Rivers of Fine-grained Suspended Sediments to Coastal Waters from All Sources and of Dissolved and Particle-associated Pollutants.

IV Investigation of Coastal Sedimentary Systems that Affect the Transportation and Accumulation of Fine-grained Sediments.

V Transport and Accumulation of Agricultural Chemical Residues in Coastal Systems of the WESTPAC Region.

VI Prediction and Monitoring of the Movement and Distribution of Oil in the WESTPAC Region.

VII Exchange Processes and Circulation at Coral Reefs.

I

1. Title of Project

Survey of Currents and Tides in the Coastal and Nearshore Waters of the WESTPAC Region.

2. Justification and Background

Dispersion and transport of pollutants which enter the coastal and nearshore waters of the WESTPAC region at various points depend on the dynamic characteristics of the coastal waters, in particular on the general circulation, mixing from tidal currents and the variability of the currents induced by wind systems such as the monsoon. In trying to predict and control the ultimate fate of pollutants, these oceanographic characteristics should be known for any given time and area. For this purpose, currents should be mapped at regular intervals to provide background knowledge for the transport of pollutants. The necessary data should be obtained from regular physical oceanographic surveys of the Region, such as those conducted in the waters around the Korean peninsula. Knowledge of mixing conditions in areas of strong tidal currents should be improved by gathering information on tidal currents and through the application of numerical tidal models.

It is known that areas of the ocean exist where the variance of the currents is largest not at seasonal or tidal periods but in periods ranging from days to weeks. This is particularly true in many coastal situations. Under those circumstances, estimates of the distribution of pollutants by prevailing currents can be quite misleading if they are based on long-term averages such as used in seasonal maps, since the average value of the transport of a pollutant can be expressed as the sum of an advective transport and a diffusive transport, and only the advective transport is incorporated in seasonal maps. It is therefore necessary to determine those areas where current variance is large in the period range from one day to a few weeks, and to obtain current measurements from these areas for the determination of the variance of the one-day average velocity with respect to the longer-period average. This information can serve as input for statistical models of the transport of pollutants.

3. Objectives

3.1 Long-term objectives

a) To determine the mean field of flow as a function of season for the coastal areas of the WESTPAC region.

b) To determine the spatial distribution in the variance in the day-to-day currents from the longer-term average current velocities, as a function of season, for relevant areas of the WESTPAC region, and develop relationships between these day-to-day variations in the currents and the day-to-day variations in the wind.

c) To determine the degree of tidal mixing and the location of tidal fronts in the Region.

3.2 Immediate objectives

a) To prepare oceanographic charts which give the distribution of average currents for various time intervals, at least seasonally, based on all available data, and to update these charts as new data become available.

b) To prepare charts which give indices of the intensity of tidal mixing and of the intensity of the eddy-diffusion processes associated with fluctuations in the current field over time periods greater than the tidal period, based on all available, data, and to update these charts as new data become available.

c) To designate national correspondents or contacts in each participating country, responsible for improving the information on currents and tidal mixing on appropriate maps.

d) To promote regular oceanographic surveys, by individual countries preferably in co-operation with other participating countries, and the collection of data on currents and tidal mixing, the data to be collated by national correspondents or contacts.

e) To apply and improve models that relate the mixing indices with the vertical stability and the location of tidal fronts.

II

1. Title of Project

A Co-operative Study of the Transport of Pollutants in the Sea of Japan, Yellow Sea including Bohai Gulf, and the East China Sea.

2. Justification and Background

These contiguous seas are bordered by countries having high populations and a large or a developing industrial base. The consequent large input of pollutants in domestic sewage and industrial waste waters has, in certain local areas, already degraded water quality, and such degradation will increase.

Bohai Gulf, located at the northwestern end of the Yellow Sea, is a noteworthy example of an inland marine waterway subjected to an increasing pollutant load from a variety of industries in bordering countries including oil fields, oil refineries and chemical factories. This waterway, with the rest of the Yellow Sea, receives a large sediment input from the Yellow River, which discharges the largest sediment load of any river in the world.

Effective management of the coastal waters of these inland and adjacent seas requires a knowledge of the patterns of transport of pollutants within and through them. Several nations border these seas, and hence a co-operative international effort is needed for the development of this required knowledge.

3. Objectives

3.1 Long-range objectives

a) to document the strength and location of sources of pollutants to these contiguous waterways.

b) To determine the routes and rates of transport of pollutants within and through these contiguous seas, and the variations in the transport patterns with season and under extreme, aperiodic conditions.

c) To predict the changes in the transport of pollutants resulting from changes in the location, strength and properties of the pollutant sources.

d) To use such predictions to advise Member States on management actions required to conserve and improve the water quality in these contiguous coastal waterways.

3.2 Immediate objectives

a) To make measurements of the temporal and spatial variations in current velocity and other properties so as to describe the patterns of transport within and through these contiguous areas, to aid the development of a predictive model of the transport of pollutants within and through these waterways and for use in the adjustment and verification of such a model.

b) To develop such a predictive model of transport of pollutants within and through these contiguous seas.

c) To develop and maintain an up-to-date inventory, available to all Member States participating in the study, of the locations, strengths and properties of existing pollutant sources.

III

1. Title of the Project

Long-term Monitoring of the Input via Rivers of Fine-grained Suspended Sediments to Coastal Waters from All Sources and of Dissolved and Particle-associated Pollutants

2. Justification and Background

Many of the more insiduous pollutants, including chlorinated hydrocarbons and most metals, are relatively insoluble in water and have an affinity for fine-grained particulate matter. As a result, these contaminants are rapidly scavenged from the water by fine-grained suspended matter. The subsequent transport and accumulation of these pollutants are controlled by the fine-grained particle system. It is evident, therefore, that to understand the patterns of transport, dispersal, and accumulation of these pollutants in coastal waters, it is necessary that the fine-grained sediment system in these water bodies be understood.

To understand a fine-grained sediment system, knowledge of the rate of input of such sediment to the coastal water body, and the temporal variation of this input, is needed.

Rivers constitute a major proximate source of pollutants to coastal water bodies. Evaluation of the coastal transport of pollutants requires knowledge of the locations and strengths of all pollutant sources. Suspended sediment itself may, in certain situations, constitute a pollutant.

3. Objectives

3.1 Long-range objectives

a) To develop a continuous, long-term record of the input of fine-grained suspended sediment from all sources to all coastal waters in the WESTPAC region.

b) To develop a continuous, long-term record of the input of dissolved and particle-associated pollutants via rivers to all coastal waters in the WESTPAC region.

c) To evaluate the effects of human activities such as mining, deforestation, agriculture, urbanization and other land-development practices on the input of suspended sediment to coastal waters.

3.2 Immediate objectives

a) To arrange for the establishment, in each country within the WESTPAC region, of a network of monitoring stations at which measurements of the rate of input of suspended sediments and of dissolved and particle-associated pollutants to estuaries, bays, inland seas and other coastal water bodies would be made. One station should be located at the mouth of each river that provides any significant amount of suspended sediment and/or pollutants to the coastal waters. Stations should also be located along shorelines which are subject to erosion and which are composed in part of fine-grained materials, so that inputs from such sources can also be determined.

Monitoring stations should also be established at locations suitable for the measurement of the input of suspended fine-grained material from other sources, such as mining operations.

IV

1. Title of Project:

Investigation of Coastal Sedimentary Systems that Affect the Transportation and Accumulation of Fine-grained Sediments.

2. Justification and Background:

Sedimentation has been identified as one of the major environmental problems throughout the WESTPAC region. The problems are particularly serious for fine-grained materials — silt, and particularly clay — because of pollutants, bound to the particles. Many pollutants are relatively insoluble in water and have a high affinity for fine-grained particulate matter. As a result, they are rapidly removed from sollution near their points of introduction into the aquatic environment and their transport and accumulation are controlled by the fine-grained-sediment dispersal system. It is evident, therefore, that to understand the patterns of transport and accumulation of pollutants in coastal waters we must understand the fine-grained sediment systems.

Man has affected dramatically not only the inputs of pollutants, but also the inputs of sediments to coastal waters. Activities that have changed sediment inputs include: mining, deforestation, agriculture, and urbanization.

Studies of fine-grained sediment systems frequently can be initiated most effectively by an investigation of the sedimentary record since it integrates over relatively long periods of time.

3. Objectives

3.1 Long-range objectives

a) To understand the fine-grained sediment systems of coastal waters and the associated transport and accumulation of particle-bound contaminents.

b) To evaluate the effects of dredging and dredged material disposal on the environment and living resources, and to develop plans for the management of dredged material.

3.2 Immediate objectives

a) To map the areas of accumulation of fine-grained sediments

b) To determine the locations and magnitude of the sources of fine-grained sediment

c) To determine the routes and rates of transport of fine-grained sediment

d) To determine the sites and rates of accumulation of fine-grained sedimentary particle-bound pollutants

e) To determine the processes that control the mobilization, dispersal and availability of particle-associated pollutants.

V

1. Title of Project

Transport and Accumulation of Agricultural Chemical Residues in Coastal Systems of the WESTPAC Region.

2. Justification and Background

Agricultural activities use prolific amounts of chemicals such as fertilizers and pesticides, and the amounts are increasing each year. The chemical residues derived from agriculture finally reach, and are distributed in, the coastal waters by various transport systems. These residues have caused problems and they are likely to become more severe in the future. An understanding of the inputs, the routes and rates of movement, and the accumulation of chemical residues, is imperative to safeguard the relatively high productivity of coastal waters and its fishery resources, and to prevent public health problems.

3. Objectives

3.1 Long-range objectives

a) To understand the sources, pathways, and processes that control the distribution and accumulation of agricultural chemical residues in coastal waters and their living resources.

b) To determine the effects of these chemicals on the environment, and the living resources, including man.

c) To provide data for policy-making on the use of chemicals in agriculture so as to attain the proper balance between agricultural development and other resources.

3.2 Immediate objectives

a) To initiate studies to assess the present levels of chemical residues in selected areas.

b) To determine the effects of currents, mixing and sedimentation on the distribution of chemical residues in selected areas and on their variation in time.

c) To set up a pilot project area as a model to design and carry out a project to understand the rate of change, the pathways, the mechanisms and the agents of transport and accumulation of the chemical residues.

VI

1. Title of Project

Prediction and Monitoring of the Movement and Distribution of Oil in the WESTPAC Region.

2. Justification and Background

Increased transportation of petroleum and its products in the WESTPAC region by tankers, and increased off-shore production of petroleum, particularly in deeper water, have created a growing problem of oil spillage from operational discharges and accidents. The volume and dispersal of this spilled oil need to be assessed so that damage to the marine resources may be evaluated and so that an effective response can be mounted to protect selected ecosystems.

The absence of long-term oceanographic and meteorological data in areas subject to high risk of spillage severely limits accurate prediction of the movement of spilled oil. Such data are essential to predict, over large areas, concentrations of oil from continuous discharges and to determine the likely paths and impact points of major oil spills at potential spill sites at different times of the year and under different oceanographical and meteorological conditions.

The needed data on currents and waves can be obtained most effectively using offshore oil-production platforms and buoy systems in major shipping lanes. Until such data are available, we must rely on crude models using generalized current, wind and wave information; spot oceanographic and meteorological measurements at the time of a spill; and monitoring programmes to observe the movement and stranding of spilled oil.

Information on the proper measurements and surveillance to be carried out on major slicks, and the frequency and methods of monitoring, should be transmitted to Member States of the WESTPAC region. This should be part of a broader effort to provide guidelines on the use of this information and oil spill control technology to protect coastal systems by dealing with spills at sea or on the coastline. In this latter effort the activities of the IOC should be closely co-ordinated with those of IMCO and UNEP.

3. Objectives

3.1 Long-range objectives

a) To demonstrate the need to minimize the discharge of oil into the seas of the WESTPAC region.

b) To acquire continuous, long-term, wind, current, and wave data from petroleum production platforms and associated oil shipping lanes.

c) To develop or adapt subsurface and surface oil-transport models to use the long-term continuous data to be acquired through this project.

d) To utilize the models to predict areas of high oil concentration in the water column and likely transport pathways and impact areas.

e) To evaluate levels, trends, and variations in dissolved and suspended hydrocarbons in sea water and sediments.

f) To assist Member States of the WESTPAC region in developing response programmes to deal with offshore oil spills.

3.2 Immediate objectives

a) To develop programmes for the acquistion, processing and dissemination of data on winds, currents and waves from production platforms and in major shipping lanes throughout the WESTPAC region. Such observational programmes should be required in the permitting process for offshore oil exploration and production platforms.

b) To develop an interim programme for acquisition of meteorological and oceanographic information following major spills.

c) To utilize existing oil-spill models with available data to predict areas of high dissolved-/or suspended-oil concentration and the most likely impact points of surface-transported oil from likely spill sites.

d) To support the continuation and/or expansion of a regional monitoring programme for dissolved and suspended oil concentrations, spill locations and volumes, slick observations and coastal impact areas.

e) To promote, through IOC, IMCO, UNEP and other appropriate entities, an integrated programme to provide a series of guidelines relating to:

(i) the use of spill-transport models as tools in oil-spill response activities;

(ii) the development and/or acquisition of protection technology to prevent or minimize oil-pollution damage to major ecosystems of the region;

(iii) the development and/or acquisition of appropriate technology to remove oil from the water surface or the coastline;

(iv) the development of appropriate criteria for the selection or rejection of oil spill control chemicals as a response tool.

f) To promote international co-operation in the acquisition and sharing of data and other resources necessary for effective response to oil spills.

VII

1. Title of Project

Exchange Processes and Circulation at Coral Reefs

2. Justification and Background

Coral reefs are delicate ecosystems which may be adversely affected by industrial activity acceptable elsewhere. Siltation due to mining, and pollution from offshore oil exploration and drilling, are examples of the problems that may occur in the near future. Since very little is known of the circulation in the vicinity of coral reefs and the exchange of water between the lagoon and the open sea, through inlets and across the reef at high tide, it is at present impossible to estimate lagoonal residence times, etc. Some of the related problems are extremely difficult; for example, the degree of interdependence between adjacent reefs in terms of water exchange is virtually unknown. It is urgent to devise a programme for a quantitative assessment of water exchange and mixing around coral reefs. This may have to include an assessment of methods and instrumentation.

3. Objectives

3.1 Long-range objectives

To provide a basis for safe economic development of coastal areas where coral reefs exist and for the development of adequate contingency plans to counteract effectively all adverse consequences of possible accidents.

3.2 Immediate objectives

a) To devise the best methods and propose adequate instrumentation for the measurement of circulation, water exchange and mixing in the vicinity of coral reefs.

b) To determine typical circulation patterns and attempt a classification of coral reefs in terms of hydrodynamic conditions.

c) To prepare a future classification of coral reefs, WESTPAC Member States should co-operate in studies of selected reef areas.

ANNEX V

PROPOSED TRAINING PROJECT

1. Title of the Project

The use of, and instruction in, standard methods for the sampling and analysis of the pollutants and other water-quality parameters in the marine environment throughout the WESTPAC region.

2. Justification and Background

Different laboratories in the WESTPAC region use different methods to sample and analyze for pollutants and other water-quality parameters. The comparison of data from different sources requires that the precision and accuracy of the various methods be evaluated and that standard methods be adopted. This is particularly important for analyses for chlorinated hydrocarbons, radionuclides, petroleum hydrocarbons, micro-organisms and some metals for which methods are not well developed, concentrations are low, and analyses are difficult.

3. Objectives:

3.1 Long-term objectives

a) To establish one, or more, centres for the inter-calibration of techniques and instruments used by WESTPAC Member States in measuring the concentration and transport of pollutants (including current measurements) and to develop and test new methods and instruments.

b) To establish standard methods for sampling, analysis, and data processing for a suite of pollutants of interest throughout the WESTPAC region.

c) To publish, in appropriate languages, manuals describing these methods.

d) To promote the acquisition of recommended equipment.

3.2 Immediate objectives

a) To assess the precision and accuracy of the methods used throughout the WESTPAC region in sampling and analysis for pollutants.

b) To standardize units and the form of reporting of results.

c) To conduct training courses in the use of laboratory methods with the assistance of the expert provided for in Decision WESTPAC-I.20.

ANNEX VI

PROPOSED DATA EXCHANGE PROJECT

1. Title of the Project

Establishment of Scientific Information Exchange Systems.

2. Justification and Background

In any scientific investigation, free exchange of information is essential if the results are to be considered fully within the general framework of scientific knowledge and understanding. In scientific investigations involving the international co-operation of two or more countries, the uninhibited exchange of information is essential for satisfactory progress and completion of a project. In studies of pollutant transport and other studies requiring measurement of concentrations of pollutants, the free and timely exchange of data has considerable significance because of public health and socio-economic implications.

3. Objectives

3.1 Long-term objectives

To establish a network of national data centres for the collation, storage and dissemination of data on the coastal transport of pollutants and pollution throughout the WESTPAC region.

3.2 Immediate objectives

a) To begin to develop mechanisms for data and information exchange on the coastal transport of pollutants and pollution problems throughout the WESTPAC region.

b) To publish a newsletter which would, among other things: (i) summarize research and monitoring on coastal transport of pollutants and pollution throughout the WESTPAC region; (ii) announce pertinent workshops and symposia; and (iii) point out opportunities for research on coastal transport of pollutants and pollution throughout the WESTPAC region. The newsletter should be published by a scientific institution of the WESTPAC region with support from appropriate governmental or international agencies.